

REMARKS**Summary of the Office Action**

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Takagi et al. (U.S. Patent No. 4,519,064) (hereinafter “Takagi”).

Claims 2-9 and 12-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takagi.

Summary of the Response to the Office Action

Applicants have canceled claims 4 and 14 without prejudice or disclaimer. Applicants have also amended claims 1 and 9 to differently describe embodiments of the disclosure of the instant application’s specification. Accordingly, claims 1-3, 5-9, 12-13 and 15-17 remain currently pending for consideration.

Rejections under 35 U.S.C. §§ 102(b) and 103(a)

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Takagi. Claims 2-9 and 12-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takagi.

Applicants have canceled claims 4 and 14 without prejudice or disclaimer. Applicants have also amended claims 1 and 9 to differently describe embodiments of the disclosure of the instant application’s specification. To the extent that these rejections might be deemed to apply to the claims as newly-amended, they are respectfully traversed for at least the following reasons.

In an optical information recording medium, as described by the combination of features in newly-amended independent claim 1 of the instant application, a reflected light reflected from

areas of the phase pits is smaller in magnitude than the reflected light reflected from areas between the phase pits. Applicants respectfully submit that a reading laser beam incident to the optical information recording medium is diffracted on the areas of the phase pits, thus decreasing in optical intensity of the reflected light reflected from the areas of the phase pits. On the other hand, the reading laser is not diffracted on the areas between the phase pits because the reentrants are not formed on the areas between the phase pits. Applicants respectfully submit that by detecting a difference in optical intensity between the areas of the phase pits and the areas between the phase pits, information recorded in the phase pits can be optically reproduced.

On the other hand, Applicants respectfully submit that Takagi discloses an optical recording medium in which information is optically reproducible as a recorded signal by using a difference in absorption factor of phase pits. As shown in FIG. 4 of Takagi, the phase pit 304, which is a reentrant as viewed from the entrance side of a laser beam, is formed on a reflection film 305 in an information recording region 311 by selectively removing a recording layer 302. The phase pit 307, which is a “convexity” as viewed from the entrance side of the laser beam, is formed in a guide signal region 310. Film thickness of the recording layer 302 on the phase pits 304 and 307 is extremely thin in comparison with areas where the phase pits 304 and 307 are not formed. It is to be noted that the recording layer 302 is formed from materials having a high light “absorption” factor. The laser beam irradiated on the areas where the phase pits 304 and 307 are not formed is principally absorbed by the recording layer 302 before transmitting to the reflection film 305. Accordingly, Applicants respectfully submit that the optical intensity of reflected light reflected from areas where the phase pits 304 and 307 are formed is “large” in comparison with areas where the phase pits 304 and 307 are not formed.

In the Office Action, the Examiner has pointed out that the reflective layer 305 in the guide signal region 310 has “reentrants” respectively corresponding to phase pits. Applicants respectfully submit that, as shown in FIG. 4, the reentrants existing between the phase pits 307 are filled with the recording material having a high light “absorption” factor. The thickness of the reentrants between the phase pits 307 in the guide signal region 310 is substantially same as areas where the recording material is not removed in the information recording region 311. The laser beam irradiated on the reentrants between the phase pits 307 is principally absorbed by the recording material before transmitting to the reflective layer 305 and thus the incident laser beam is not sufficiently reflected on the reentrants.

It is therefore apparent that Takagi does not disclose, nor even suggest, such an arrangement in which a reflected light reflected from areas of said phase pits is “smaller” in magnitude than the reflected light reflected from areas between said phase pits, as defined by newly-amended independent claim 1 of the instant application.

As to claims 6 and 15, the Examiner has pointed out that Takagi discloses the maximum value of the reflectance of the reflective layer with respect to the reading laser beam is in the range of the at least 10% and no more than 25% (column 5, lines 32-39). Applicants respectfully submit that Takagi discloses that the total “absorption factor” including the effect of the reflection film is less than 20% (column 5, lines 32-39). Applicants respectfully submit that it is understood that the reading laser beam of less than 20% is absorbed by the recording material. If a transmitted light with respect to the reading laser beam is disregarded, the reflectance with respect to the reading laser beam is estimated to be “more than 80%”. Accordingly, Takagi does not disclose, nor even suggest, such an arrangement in which the maximum value of the

reflectance of the reflective layer with respect to the reading laser beam that is subjected to modulation according to the phase pit is in the range of at least 10% and no more than 25%.

In the Office Action, the Examiner has pointed out claims 2, 3, 12 and 13 are evident in Nagata et al. (U.S. Patent No. 5,410,534) (hereinafter "Nagata"), Nobumasa et al. (U.S. Patent No. 6,071,588) (hereinafter "Nobumasa"), and Kato et al. (U.S. Patent No. 6,975,577) (hereinafter "Kato"). The Examiner also has pointed out that claims 5 and 9 are evident in Watanabe et al. (U.S. Patent No. 5,838,646) (hereinafter "Watanabe"). In addition, the Examiner has pointed out that claims 7, 8, 16, and 17 are evident in Nobumasa.

Applicants respectfully submit that Nagata discloses an optical information recording medium having phase pits which are "convex" as viewed from the entrance side of a laser beam in FIG. 2(a). As shown in FIG. 2(a), the laser beam is diffracted on the "convex" phase pits. Thus, a reflected light reflected from areas of the "convex" phase pits is smaller in magnitude than the light reflected from areas between the phase pits. Nagata does not disclose, nor even suggest, such an arrangement in which a reflected light reflected from areas of the "cavity" phase pits is smaller in magnitude than the reflected light reflected from areas between "cavity" phase pits.

Applicants respectfully submit that Nobumasa discloses an optical information recording medium in which information is held by a "recording mark" which is formed by irradiating a laser pulse focused on a recording layer of crystallized state. The partially molten portions of the recording layer correspond to the "recording marks". Each of the molten portions is quenched by thermal diffusion and solidified to form the recording mark which is amorphous state. The light reflectivity of the amorphous state is smaller than that of the crystallized state, thus

information is optically reproducible as a recorded signal not by a diffraction effect of phase pits but by using a difference in reflection index of the recording material between the crystallized state and the amorphous state. Nobumasa does not disclose, nor even suggest, such an arrangement in which a reflected light reflected from areas of said phase pits is smaller in magnitude than the reflected light reflected from areas between said phase pits.

Applicants respectfully submit that Kato discloses an optical recording medium in which information is reproducible by using a difference in a reflection of a phase change recording layer. However, Kato does not disclose, nor even suggest, such an arrangement in which a reflected light reflected from areas of the phase pits is smaller in magnitude than the reflected light reflected from areas between said phase pits.

Applicants respectfully submit that Watanabe disclose an optical recording medium in which information is reproduced by irradiating a laser beam 405 ± 5 nm on land and groove regions via an optical system with a numerical aperture of 0.80 or more. However, Watanabe does not disclose, nor even suggest, whether or not a reflected light reflected from the land and groove regions is smaller in magnitude than the reflected light reflected from areas between the land and groove regions.

It is therefore apparent to Applicants that Takagi, Nagata, Nobumasa, Kato and Watanabe do not disclose, nor even suggest, an optical recording medium in which a reflected light reflected from areas of said phase pits is smaller in magnitude than the reflected light reflected from areas between said phase pits, as described in newly-amended independent claims 1 and 9.

Accordingly, Applicants respectfully assert that the rejections under 35 U.S.C. §§ 102(b) and 103(a) should be withdrawn at least because Takagi does not teach or suggest each feature of

independent claims 1 and 9, as amended. As pointed out in MPEP § 2131, "[t]o anticipate a claim, the reference must teach every element of the claim." Thus, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. v. Union Oil Co. Of California, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987)." Similarly, MPEP § 2143.03 instructs that "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 409 F.2d 981, 180 USPQ 580 (CCPA 1974)." Furthermore, Applicants respectfully assert that the dependent claims are allowable at least because of their dependence from newly-amended claim 1 or 9, and the reasons set forth above.

CONCLUSION

In view of the foregoing amendments and remarks, withdrawal of the rejections and allowance of all pending claims are earnestly solicited. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution. A favorable action is awaited.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. § 1.16 and 1.17 which may be required, including

any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0573.

This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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